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DR. MARSHALL HALL ON PUERPERAL DISEASES.

FROM HIS LECTURES NOW IN COURSE OF DELIVERY.

HAVING now, gentlemen, gone over the diseases of the various organs of the human frame, and lastly those of the uterine system, I am naturally led to treat of *puerperal diseases;* and, having devoted much attention to this subject formerly, I shall do so very particularly. There is no class of diseases which will fill your minds with greater anxiety when you have entered into practice.

Many circumstances concur to render the disorders of the female sex peculiar; but this is still more emphatically true of puerperal diseases. This fact will appear sufficiently obvious upon a simple enumeration of the principal causes of these diseases; and still more so, when it is considered that, in general, two or more of these causes co-operate together to produce the cases which present themselves to our notice in actual practice.

In both these points of view, indeed, the subject of puerperal diseases appears to me to present a peculiar object of study to the physician. In scarcely any other cases do so many and such various circumstances require to be taken into the consideration at once, as in puerperal diseases.

This class of diseases may be considered as embracing all those morbid affections which arise out of the state of pregnancy, of child-bearing, or of lactation. They may be divided into those which occur in the earlier, and in the later periods of pregnancy—immediately before, and after, and during the act of parturition—during what is termed the puerperal state—and during the period of lactation.

In the early period of pregnancy many organs suffer, in consequence of the source of irritation then set up in the uterine system. These affections are, for the most part, well known, and do not come within the design of this course, the object of which is to treat only of certain morbid affections, which occur in the puerperal state, and which appear to me not hitherto to have received the degree of consideration which is due to them.

In the later periods of pregnancy several causes combine their influence, especially to endanger the state of the brain. It is upon the conjoined and separate operation of these causes that our attention should be particularly fixed, in regard to the diseases of this period; for it is frequently by their co-operation alone that their morbid influence upon the brain is brought into activity, whilst it may occur, afterwards, that one or even several of these causes may be removed, and yet a remaining one may renew or continue the morbid effect upon the brain, which they had conjointly begun, The causes which co-operate in the last period of utero-gestation, in inducing a morbid state of the brain, are chiefly uterine and intestinal irritation, concurring with the actual pressure of the gravid uterus upon the various viscera and vessels situated behind it, and the state of plethora of the vascular system, especially, occasioned by this pressure.

During parturition the contractile efforts of the uterus and of the abdominal muscles, add another source of danger to those already mentioned; and it is at this period that the brain is most subjected to fulness and pressure, and that convulsions or apoplexy are apt to occur.

Several sources of danger are removed when delivery has taken place; and yet this is not always sufficient to protect the patient from an attack of convulsion; for this terrible affection has first occurred even after delivery has been effected. In this case, especially, I suspect that a state of intestinal load and irritation has been the exciting cause of the attack of convulsion. And this observation confirms the remark already made, that when several causes have co-operated to induce a state of danger, some may be removed, and yet, if one remain, it may lead to the most disastrous events. This peculiarity in the study of puerperal diseases, cannot be pointed out too often, or too strongly.

Convulsions do occasionally occur after delivery, even although the system be in a state of exhaustion from hæmorrhage. The state of general exhaustion is not, I believe, incompatible with a state of fulness of the brain; but this kind of convulsions will be found, I think, frequently to involve, also, a state of intestinal load and irritation.

But immediately after delivery, the danger may arise more directly and simply, from a state of inanition and exhaustion, the effects of an emptied condition of the uterus and abdomen, of abstracted pressure upon the viscera and vessels along the spine, and perhaps of loss of blood.

To these sources of danger, after delivery, must also be added the effects, perhaps, of protracted suffering, of violent pain, of mental alarm, and of what may be termed the "shock of parturition."

There is another series of puerperal affections which do not occur, for the most part, until some hours, at least, after delivery. These affections consist principally in uterine or peritoneal inflammation, in the effects of loss of blood, or in two or more of these combined. There are two other sources of irritation in the condition of the mammæ, and occasionally of the uterus; and there is that terrible disease, the epidemic puerperal fever.

Considering the important and sudden change which takes place in the condition of the uterus, in parturition, we cannot be surprised that this organ should frequently be the subject of inflammation in the puerperal state. Neither can it be matter of surprise that its appendages, the adjacent viscera, and the peritoneum at large, should not unfrequently participate in this mordbid condition. And when we further consider the degree of violence to which the brain has been subjected, during parturition, we must be led to expect that this important organ should be left, by that process, in a state of proneness to inflammation; and this is precisely the case; for, next to the viscera of the abdominal cavity, the brain is, perhaps, the organ which is most apt to become affected by puerperal inflammation.

There is another not less fertile source of puerperal disease, in the state of the alimentary canal after delivery. This state consists, in general, in a loaded or disordered condition of the large intestines; but sometimes, also, in improper things taken into the stomach. It is most important to observe, that the effects of stomachal or intestinal irritation are very similar to those of inflammation, as it affects the head or abdomen; for on the just diagnosis of these cases depends the proper application of the remedies.

Similar observations apply to the effects of loss of blood, when these are of the remote character, and attended by the phenomena of reaction. In this case, the head is apt to be so affected as to lead to the idea of inflammation of the brain; and the heart so as to present the symptoms of disease of this vital organ.

But it is rare that these sources of disease act thus distinctly; it is far more usual to observe them co-operating together to produce a mixed case, and it is in such complicated cases that all the attention and energies of the mind are required to appreciate the influence of each, and to adapt the remedies to this complicated form of disease.

There is not, unfrequently, also, a source of irritation in the state of the uterus itself. A certain degree of after-pain is usual in almost every case; but a state of irritation and pain are frequently kept up by the presence of clots of blood, and the efforts for their expulsion. This state of the uterus is full of dangers; not in itself, but by masking and concealing the beginning of dangerous diseases; pain of an inflammatory kind is too apt to be neglected, under the impression that it is but the usual after-pain.

A similar remark may be made in regard to the irritation excited in the establishment of the secretion of the milk. This process is apt to be attended by pain, fever and affection of the head, which frequently mask the beginnings of puerperal disease.

Both these sources of irritation concur to add complexity to the character, and difficulty to the diagnosis of puerperal diseases, and to constitute that peculiarity of this study to which I have already alluded.

The first of these classes of disease might, perhaps, be denominated parturient, whilst the second might be distinguished by the epithet puerperal; the former occurring, chiefly, in or near the act of parturition; the latter, usually, some hours afterwards. There is a third class of morbid affections, which follow still more remotely upon child-bearing, and which consist, principally, in the more continued effects of intestinal disorder, or of loss of blood, and issue, for the most part, in an inability to support the drain occasioned by lactation.

A fourth series of puerperal maladies, using this term in its most extended sense, arises out of undue lactation itself. They consist in the various forms and effects of exhaustion, and constitute a most important and interesting subject for renewed inquiry; for I believe them not to be at present by any means fully understood.

There is still another consideration which is full of interest in regard to puerperal diseases—namely, the state of health of the patient previously to her confinement. That which most frequently modifies the puerperal state, is disorder of the general health, of the various characters described in the first part of this course. It frequently occurs, from such a state of general disorder, that the recovery, after confinement, is tardy, the secretion of milk scanty, or even morbid, affecting the health of the infant, and that there are many local affections, especially of the head or of the heart, which are full of pain and suffering.

I have now taken a rapid survey of the principal causes of puerperal diseases. It may be truly said, that many of these causes co-operate in every case; but it is also true, that each puerperal disease is to be referred to one or two of these causes more especially. Every case of puerperal affection may, therefore, be considered as a case of modified disease, requiring that the mind of the physician be active and comprehensive, so as to embrace the numerous circumstances of the disease. This is true in a degree which scarcely obtains in any other class of diseases; and it is on this account that I have represented the study of puerperal diseases as requiring peculiar habits of inquiry and investigation.

I have adopted the term parturient, to express the condition of a person just before, just after, and during the act of parturition. It is my intention in this lecture, briefly to notice the morbid tendencies of this state, as a necessary introduction to the more detailed account of some of the affections which occur in that, which may, perhaps, be more properly termed puerperal. The distinction between the parturient and the puerperal states will be found to be at least of great practical utility.

I have cursorily alluded, in the preceding remarks, to the principal causes of apoplexy and convulsions, as they occur in the last stage of utero-gestation, and in the act of parturition. It is my present object to enter into this important question with somewhat more detail.

The first cause which I enumerated as conducing to these affections of the brain, was uterine irritation. That this species of irritation does, indeed, dispose to disease of the brain, is sufficiently obvious from the occasional occurrence of convulsions in cases, even, of dysmenorrhœa or painful menstruation.

A second exciting cause of affection of the brain, probably not very different in its nature from the former, is the parturient efforts of the uterus when labor has begun. The effects of labor-pain upon the vascular system of the head are sufficiently seen in the flushed state of the countenance. And the attack, or the recurrence of convulsion, not unfrequently takes place with each uterine effort.

With the uterine efforts must, however, be conjoined those of the abdominal and other muscles, in our estimation of the influence of labor-pains upon the state of the brain.

The third cause of affection of the head in the parturient state, is stomachal or intestinal load or irritation. It appears almost unnecessary to adduce any example of the influence of these causes upon the vascular system and nervous origins within the head. The presence of indigestible substances in the stomach, and of indurated or otherwise morbid fæcal matters in the large intestines, are amongst the most usual causes of apoplexy and convulsions in those who are predisposed to these affections, and especially in the puerperal state. The late Dr. John Clarke published an interesting and important paper, to which I shall have occasion to revert hereafter, upon the morbid influence of oysters, taken at this period, upon the brain; and it cannot be doubted that other indigestible substances have frequently, perhaps unsuspectedly, produced the same deleterious effects. One of these effects was convulsion. And it is to be particularly remarked, that the cases published by Dr. Clarke all occurred after delivery, and of course even after some of the predisposing causes of puerperal convulsion had ceased to operate.

But a still more frequent concurrent cause of convulsion, or of apoplexy, in the parturient state, is a loaded condition of the large intestines. The operation of this cause is frequently made obvious by the effects of purgative medicines and enemata, in these cases, both in the relief they effect in the symptoms of affection of the brain, and in the character of the alvine evacuations; the quantity of scybalous fæces which have thus been evacuated, in some instances, would appear incredible, were not the torpid and dilated condition of the intestines taken into the account.

Nor can there be any doubt, that the gravid uterus itself acts, by its size, and by its pressure upon the descending aorta, in inducing fulness of the vessels of the brain, in the last period of utero-gestation. It is on this principle, that delivery frequently secures the patient against the recurrence of the fit of convulsion. When the pressure of the gravid uterus falls more particularly upon the vena cava, the effect of interrupted circulation is, of course, observed in the lower extremities, chiefly under the form of œdema, but perhaps of phlegmasia dolens.

It usually happens, as I have observed already, that apoplexy or convulsion occurs in the parturient state, from the conjoined operation of several of these causes. And it is only by an attentive consideration of all of these sources of danger, that the attack is to be prevented in the first place, and its recurrence in the second.

It is important also, with the view of prevention, to consider the probable condition of the encephalon itself immediately leading to an attack of convulsion or apoplexy. It is doubtless one either of irritation, or of fulness. Every cause of these morbid states of the brain must, therefore, be carefully removed and avoided, whilst their effects are combated by the most vigorous remedial measures.

This is the more important, because each recurrence of convulsion is not only attended by immediate danger, but aggravates the morbid condition of the brain, and augments the tendency to the repetition of the paroxysms of convulsion. The same observation may be made of each contractile effort of the uterus and abdominal muscles, during parturition, which, like the fits of hooping cough in other circumstances, has in some instances led to convulsion.

The state of the system which obtains immediately after delivery, is, in many important circumstances, different from that which exists during pregnancy and in the act of parturition.

The emptied state of the uterus and abdomen constitutes in itself a source of inanition; and there is usually more or less of loss of blood, and sometimes even an extreme degree of hæmorrhage, so that the system in general must be considered to be in a state of exhaustion.

There can be no doubt, that this very exhaustion alone has, in some instances, induced convulsion. But it is probable that in many, some of the causes of this terrible affection which have been mentioned, and especially a state of uterine, stomachal or intestinal irritation, have concurred to produce this effect.

The more usual immediate consequence of delivery, and of uterine hæmorrhage, is a state of syncope; this is more or less severe and alarming, according to the degree of loss of blood, and of the susceptibility to its effects, and varies from the slightest degree of faintishness to such a state of syncope as may endanger life.

Similar effects are sometimes to be attributed to the protracted sufferings of a lingering labor; in other cases to the violence of pain; and in others, to alarm and dreary apprehensions and anticipations on the part of the patient.

These circumstances sometimes lead to sudden death, an event which may occur immediately upon delivery. In such cases, cordials given during the last stage of labor, the recumbent position guardedly preserved, and the immediate and careful application of the abdominal bandage, may save the patient.

Perhaps the condition of the system, under the influence of some of the circumstances of parturition, cannot be better expressed than by the term "shock;" and it may be aptly compared to a similar state under very different circumstances, and especially those of a painful operation. This state of shock seems to consist in a partially suspended power and action in the system. It may be suddenly fatal; or it may yield to reaction, which may or may not pass the boundary of health; or, lastly, after some feeble efforts, it may lead to a gradual but irretrievable sinking of the vital powers. This subject has not been sufficiently noticed in medical writings, especially in connection with the parturient state.

One of the influences of shock still requires to be mentioned. Many causes of disorder may long remain dormant, or may be affecting the system in the most gradual manner only, until they are called into a more active operation by some kind of shock. This is particularly true in regard to intestinal irritation. This cause of disorder may long subsist in an inactive state, until, by the occurrence of some shock to the system, it is brought into but too effective operation. It is for this reason that the effects of intestinal irritation are so frequently observed in the puerperal state, and after various accidents, without which this cause of constitutional derangement might have long remained inoperative, or at least insufficient for the production of acute disease.

In the treatment of apoplexy or convulsions before delivery, and even after delivery, except in cases of profuse uterine hæmorrhage, the principal remedy is bloodletting; the second object is the removal of all those exciting causes of the disease which have been mentioned; and the third is cupping of the occiput and neck.

In the case of hæmorrhage, the remedies are still the removal of the exciting causes, and cupping.

It is not my intention, at present, to pursue the subject of the treatment of these affections, because it is my wish rather to confine myself to the description of some other forms of puerperal disease which have, in my opinion, been greatly overlooked. But I cannot refrain, even in this place, from pressing several points upon the attention of practitioners.

Of the absolute necessity for full bloodletting I need not speak; but I would particularly observe, that a state of exhaustion from loss of blood generally from the system, does not protect the brain from a state of vascular fulness. This I consider to be abundantly proved in the excellent paper of Dr. Kellie, in the "Medico-Chirurgical Transactions of Edinburgh," and by the fact of the occurrence of convulsions, and even of apoplexy, in this state of exhaustion. It is in this very case that cupping of the occiput is so strongly to be recommended. The brain, in some cases of exhaustion, is relieved by the topical abstraction of a very small quantity of blood; and this relief is not only obtained by a less expenditure of blood, but is more permanent than similar relief effected by general bloodletting.

The next point upon which I would insist, is the careful removal, not of one or two, but of all sources of irritation—of all the possible exciting causes.

A point not less important than the treatment of these affections is their prevention. I believe no means would conduce so much to this purpose as the invariable administration of copious warm water injections at some period before or during labor. The large intestines would thus be relieved of their load, and a great and fertile source of future disease would be removed. And this remark applies not to affections of the head only, but to many other puerperal diseases, as will be noticed in a subsequent chapter.

The morbid affections which occur in the puerperal, as distinguished from the parturient state, usually commence at such a period after delivery as may have given space for reaction to take place, from the state of inanition and exhaustion which usually obtains immediately upon parturition.

It should be observed, however, that there is scarcely a disease of the puerperal state which does not occasionally show itself before delivery. In these cases the disease usually remains stationary, or nearly so, until parturition has taken place, and then assumes its exasperated form.

In some instances, and those of the most serious kind, puerperal disease supervenes insidiously, and makes a slow, and probably an unheeded and fatal progress.

Even of those puerperal diseases which commence by marked symptoms, the more serious are not always the most unequivocal in their mode of attack. Pure inflammation is, for example, less marked by rigor, heat and other obvious symptoms, than the effects of intestinal irritation. This is a point which requires to be enforced upon the attention of practitioners, for, in inflammation especially, it is of the utmost importance to detect the disease in its very origin.

I shall first treat of abdominal inflammation and its varieties; secondly, of intestinal irritation in its various forms; thirdly, of the effects of loss of blood; and fourthly, of mixed cases which combine two or more of these morbid states. I shall then resume the diagnosis, and the comparative treatment of these diseases, under separate heads.

Subsequent experience has only confirmed the opinion which I expressed seven years ago, that the effects of intestinal irritation, and of loss of blood, constitute a great part of puerperal diseases, and a great proportion of the fatal cases; and that of those fatal cases, many are rendered so by a mistaken use of the lancet.

The effects of intestinal irritation and of loss of blood are, indeed, as I shall proceed to show, apt to produce symptoms of increased action resembling those of inflammatory disease, and prompting the use of evacuant remedies. This proceeding is attended by two sources of error; in the first place, the symptoms are frequently relieved in the first instance—a state of faintishness taking place of that of reaction—and the physician is apt to judge that the remedy had relieved, but was used in too mild a degree to subdue the disease, and is thence led to a repetition of the measure; in the second place, after the first and second moderate use of the lancet, for instance, the reaction returns in a still more violent degree than before; and it is then imagined, that the disease, though relieved, was not only not subdued, but had been suffered to make a fearful progress; the lancet is, therefore, again used, until it may be that the powers of the system yield, and sinking takes place of reaction; or, if the last bloodletting be considerable, the scene may be closed by a sudden and unexpected dissolution. I published several sad instances of this kind in a former little work upon this subject, to which, to prevent repetition, I would refer you.

I have already observed, that the effects of inflammatory action, of intestinal irritation and of loss of blood, are alike apt to prevail in the puerperal state. It is only necessary to add, that they variously resemble each other, in different instances, so as to require the utmost attention for their diagnosis, and yet require totally different remedies for their safe treatment and cure, to give the subject all the interest of which it is susceptible.

[To be continued.]

INFLAMMATION AS INFLUENCED BY THE TIME OF ITS DEVELOPMENT.

[Communicated for the Boston Medical and Surgical Journal.—Concluded from page 76.]

In my last communication I endeavored to show that there was a necessary connection between the *time* of development of inflammation, and its course. It was made to appear that inflammations, at least of the skin, arising suddenly, run their course rapidly; and inflammations slowly arising are proportionally slow in their progress and decline—whether they arose from the action of different external irritants, or of internal causes (eruptive fevers) under the same circumstances, or from the same irritant (the vaccine virus) under different circumstances. This was all the proof the nature of the case is susceptible of. If it be objected that the facts introduced, though general, are not universal, the reply is, that in the affections of a structure so complex as the human frame, perturbating causes may well arise to derange what would otherwise be a regular operation, and hence exceptions to general rules need not be estimated. Were an individual about to give an explanation of the position of the fœtus in utero at birth, the question with him would be, why it presents twenty-five times out of twenty-six with its occiput behind the left acetabulum, not why it presents the twenty-sixth time in another quarter.* Other facts might be added to show that time is an essential element in the production of inflammation. Smallpox, when it becomes confluent, has an eruptive fever of shorter duration, and in fact an erythema like scarlatina often precedes the eruption. Gonorrhœa usually appears sooner after exposure than chancre; and erythema, when from a wound, is much more rapidly developed than phlegmonoid inflammation.

Nor is the relation between time and organic action confined to inflammation. It is an element in all the operations of nature, and is connected always with the perfection of the product developed. Man is the most perfect animal, and is the longest from the commencement of his formation until he is capable of reproducing his species. The vaccine vesicle is the most perfect specimen of inflammation that attacks the skin; and from its regularity of development, defined form, and absence of pain attending it, deserves to be considered a healthy product, instead of an inflammation. The skin seems adapted to produce it, as the earth does a flower; and the resemblance it bears to a compound flower is so close as to leave little room to doubt that the same law governs the development of both. There is the areola, to correspond with the florets of the ray; the cells of the vesicle, to correspond with the florets of the disk; the central depression, which is found in the early stage both of the pock and daisy; the period of the eruptive fever, corresponding to the formation of the bud; the period of maturation, corresponding to the perfection of the flower; the constitutional affection at the ninth day, a counterpart of the act of reproduction; and the period of decline, analogous to the development of the seed. Compound flowers make their appearance later in the season than the simple ones, and are generally slow of evolution.

I would refer to another series of facts which may not appear quite so relevant to the subject. Those animals which are subject to transformations evidence, by their rapid growth and wonderful voracity, great activity of organic action. To this extreme rapidity of development, or rather to the cause producing it, is owing the fact of their transformation. In them reproduction is not noticed until the last transition is effected. The frog does not reproduce in the tadpole state, nor the insect in the larva state. Frequent moulting is exhibited by those animals. May it not be possible that the act of reproduction and that of transition are connected with each other? That in those animals where vital action is excessive, transition takes the place of reproduction, until this activity becomes moderated, and then comes reproduction, which is followed by the death of the individual. And hence, perhaps, the reason that transition is no longer witnessed in the other animals. Nutrition is less active, and what would otherwise be transition, is now reproduction. The process of moulting and that of reproduction are attended by high excitement.

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* Since I have alluded to this subject, I will offer an explanation of this fact, which will pass for what it is worth. The situation of the fœtus is regulated by the polarity that exists between its nervous system and that of its mother. The brain of the fœtus is turned away from the brain of the mother, the spinal marrow from her spinal marrow, and the right side from her right side. Each part where the nervous fluid is most concentrated, is as distant from the corresponding part in the parent as possible.

A satisfactory solution is given of this connection between time and the consequences of organic action, by supposing the cause of the determination of the fluids to be a subtle fluid of the nature of electricity, and all the remote causes of disease primarily to excite disturbances in the motions of this fluid.

The point on which the solution turns, is the fact that one fluid is propelled by another of a different density, and resists by its inertia the motion of this latter fluid. The resistance the rarer fluid then meets with, is in proportion to the particles it displaces. But this resistance increases as the square of velocity increases. Therefore if two currents be excited, and one acquires the same velocity in two days that the other does in three, the resistance the first meets with will be in proportion to that the second meets with, as 9 to 4;* and as this resistance depends on the displacement of the particles, this displacement will be in the same proportion.

Having thus shown that a current quickly excited, even with the same velocity, will have removed in the same time more particles of the circulation than one slowly excited, it is incumbent on us to show next that it operates to cut itself off, in order to account for the circumstance that inflammation, quickly excited, heals as suddenly. This second circumstance, it will be easily perceived, follows directly upon the first. For the blood being moved out of the course of circulation by the mechanical force of a fluid, when it accumulates around a point must oppose an obstacle to the further passage of that fluid from that point. The conducting power of the blood depends in a great measure on the motion of its particles; and the amount of fluid passing off in a given time, will depend on two circumstances, viz., freedom of motion among the particles of the blood and the force of the cause which impels it. When, therefore, either of these remain constant, the current will depend on the other; and since any current which passes through a point may be considered as divided into one which passes towards, and another which passes from, that point, the first impelling, the second attracting, the other respectively, the interposition of a non-conductor at the point will destroy more or less of the impelling force. Hence that part of the current behind will be arrested the sooner, in proportion to the obstruction to the motion of the globules, or to the greater number that are moved out of the course of the circulation in a given time, or to the greater velocity of the primitive current; and as the inflammation is kept up by the impelling force of the current directed towards the point, it will be disposed to cease as soon as the current ceases, that is, sooner in proportion to its velocity. From which it would appear that of two equal velocities, excited in unequal times, that which is excited in the shortest time produces soonest an inflammation, which also runs its course more rapidly. There is no reason why, of two currents excited in this manner, one may not produce a pustule like that of the smallpox, and another a pimple, a rose spot, or a point of inflammation like that which obtains in erysipelas and scarlatina, whatever may be the cause exciting them. At the same time it is manifestly unnecessary to suppose that, in order to produce these effects, the velocities should be equal. Any imaginable velocity capable of disturbing the movements of the blood might give rise to them, provided the conditions of time be observed.[*]

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* The resistance encountered in equal spaces of time.

We have thus a consistent explanation of two general facts: 1, that inflammations suddenly developed run their course with rapidity; 2d, that inflammations slowly developed are of long duration.

This explanation is adapted to the commonly received notion of electricity. Strictly speaking, however, the mode of development of the vaccine vesicle I conceive to be as follows. Around the centre of the red inflamed point a series of vibrations commence, which are transmitted along the surface of the skin to the circumference of the areola, between which and the centre these vibrations proceed like circular waves. Advancing from the centre to the circumference, and being reflected from the circumference to the centre, in the early stages of the inflammation those from the centre to the circumference are more powerful than those reflected from the circumference to the centre. They are more powerful, but in a diminishing ratio as the inflammation progresses; so that the forces of the reflected waves from the circumference to the centre increase upon those from the opposite direction, until a limit is attained where they are equal. To this it is owing that the disk, which at first developes itself at the circumference like a ring, finally protrudes at the centre. An electrical current is poured along some nervous or arterial channel to the point, and also along the stem of a plant of a compound flower, and the constitutional affection which takes place at the ninth day in the one instance, analogous to the period of impregnation which follows the complete development of the flower in the other, marks the return of the electrical current towards the centre, or the restoration of its equilibrium, in consequence of the impulses reflected from the edge and surface of the product preponderating over those from the centre. The tendency to an eruption of pustules is present at this time, and will succeed, or not, according to the perfection of the primary vesicle. In inoculation, which is an imperfect form of vaccination, it usually succeeds. The absence of all constitutional affection probably marks the most perfect form of vaccination, and depends on the undulatory movements being the least possible, which are yet capable of developing the vesicle, and attaining a limit by which they are reflected. Ringworm affords an instance where these movements are not sufficiently intense to give to themselves a reflecting boundary in a circumscribed areola, and the disorder spreads indefinitely. According to this, smallpox and the vaccine disease are the same, the electrical excitement being only greater in the former than in the latter; and it is not improbable that by a succession of inoculations from the same matter, the vaccine disease may be produced.

It is some corroboration of the above view, that on the decline of a vesicle, the areola forms oftentimes concentric rings, like those which occasionally surround luminous bodies.[*] These vibrations are supposed to be essentially the same as those which, according to the undulatory theory, constitute light.

The following extract from Edwards on the influence of external agents on life, will serve to show that the above speculations are warranted by facts of a more tangible kind.

"In order to ascertain if diseases could be communicated, by electricity, from one person to another, as he was led to suppose by former experiments with intermittent fevers, P. Smith, of Fordham, was desirous of trying experiments on some person laboring under a disease which was inflammatory, but not considered infectious; he, therefore, had one of his men vaccinated. On the seventh day, the man was placed on the insulating stool, and connected with the positive conductor; a small incision was made with a lancet in the pustule, and an incision was also made in the arm of a lad with a *new* lancet; a wire four inches long was passed through a glass tube, one end of which touched the pustule on the man's arm, and the other the incision on the boy's arm—the electrification was continued for eight minutes, when the boy was removed. His arm was daily examined, and it was found that he was as completely vaccinated by electricity as any person could be by the usual mode. My friend afterwards endeavored to communicate the virus to two girls, by passing the electrical fluid from the pustule on the boy's arm, who had been vaccinated by electricity, to incisions made in theirs. For three days the medical gentlemen supposed it had taken effect; but, on the fourth day, all appearances of vaccination died away. These girls were, however, afterwards vaccinated in the usual way in four places, two of which died away, and the other two took but very slightly. My friend, Charles Woodward, afterwards repeated this experiment upon an infant, the child of one of his friends, but with this difference, that he did not allow the conducting wire to come in contact with the child's arm. The electric fluid was consequently transmitted in the form of small sparks. The disturbance which these produced, though trivial, prevented the application from being prolonged for the full time, which my friend would have wished; inflammation, however, succeeded, and, until the sixth day, was such as to induce the medical attendant to believe that the vaccination had been complete; from that day, however, the pustule died away." B. H.

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BOSTON, SEPTEMBER 19, 1838.

IMPORTANCE OF THE GENERAL DIFFUSION OF A KNOWLEDGE OF ANATOMY, PHYSIOLOGY AND HYGIENE.

As long ago as the 30th of May, F. H. Hamilton, M.D., of Auburn, N. Y., was invited to deliver a short series of lectures before the pupils of a female seminary in that town, on the important sciences of anatomy, physiology and hygiene. These lectures appear to have been prefaced by an introductory discourse of peculiar merit, which must have dragged tardily from the press not to have been circulated at least as early as the middle of June—but which has but just been given to the public.

Feeling obliged to read every publication that comes to our address, this was commenced without suspecting that it could be very remarkable, one way or the other, from the circumstance that it was prepared for a school of young ladies. We are mortified to confess that this fact should have engendered the presentiment that Dr. Hamilton had been giving pap to babes. But it is truly an excellent performance, distinguished alike for boldness, sound philosophy, fearless independence and sterling common sense. It would have gained the author the applause of an audience of profound scholars; and in a medical college, in preference to any other place, would have shone like a meteor. There are but few who can write like this gentleman. He swings his broad claymore with an unrestrained arm, till the very strong holds of quackery are laid open to public inspection. Even the polished, adroit, hypocritical, money-getting, disciple-making, orthodox practitioner of homœopathy, who physics the élite of New York with the billionth part of a grain of pulverized charcoal, is made as ridiculous as Punch in the play. There is a spirit, raciness and vigor pervading every page, producing a happy effect on the reader, and must, therefore, have been well received at the seminary, for no class of hearers are better judges of good reasoning, wit, and facts, whether in medicine or other departments of useful knowledge, than highly cultivated ladies. Probably a more lasting and widely extended influence will be given to the opinions of Dr. Hamilton—which, indeed, are the opinions of all educated physicians, on the important principles of health—than if pronounced before a body of men. Not precisely because, as falsely represented of the sex, that they immediately tell all they know, but because they will carry with them into practical operation the principles he has inculcated so happily—and the circle of knowledge, like waves receding from a pebble thrown into a stream, will keep widening, as their influence begins to bear upon the community, of which they are an essential and indispensable part.

It never can lessen the dignity or professional rank of any member of the medical profession, to go into common schools or academies to teach children the simple plan of their physical organization. Every subject on which Dr. Hamilton has lectured to the young ladies of the Auburn Seminary, should be given in all institutions of the kind in the Union. It will ultimately become a part of the course of study in all orders of schools, in which youth are taught, to make them familiar with general anatomy, physiology and hygiene. Elementary treatises have already been prepared with reference to it, and they are studied with avidity, and thus children will grow up with some rational notions of the character of the machinery of their own bodies, which is the foundation of knowing how to preserve health and how to lengthen their days.

We are sorry that Dr. Hamilton, prompt and efficient as he is in everything else, should be wholly ignorant of phrenology—the evidence that he is so being conclusive, because he positively declares it has been "*proved utterly baseless.*" He is by no means treading forbidden ground; no, it is the height of fashion to scoff at phrenology, and those who know the least about it are the loudest in their denunciation. Now this is no declaration of war, for we can only assent, ourselves, to about one tenth of the doctrine ; still, there are men of such gigantic powers, who are fully and satisfactorily persuaded of the ever-existing truths of the science, that their opinions are entitled to respect—and their corroborative facts, who can deny them ?

Among the exhibitions of the wreck which Dr. Hamilton has made of all sorts of speculators in life, adventurers in physic and rascals in practice, the ultra-dietetic systems are made conspicuous. If any one is desirous of feeding on moonshine after reading this, he must indeed be a lunatic. On the whole, the author is deserving of much praise—but, to be appreciated, he should be closely studied, and this introductory should be generously distributed through the country.

Sison Aureus.—Professor Dewey sends us the following note, which may be of consequence to those particularly interested in studying native plants.

"My attention has just been called to an article in your paper, on a plant which has attracted some considerable attention. Dr. Bates calls it Sison *aureus* in Eaton's Botany. It is one of the plants which have been changed about, from name to name. In the second edition of Eaton's Manual it was named Smyrnium *aureum* ; in the sixth edition it may be Sison *aureum ;* in the seventh it is Zizia *aurea.* It is very common in the moist meadows.

Pittsfield, Mass., Sept. 5th, 1838."

Medical Miscellany.—Frequent mention is made of considerable sickness among children. Bowel complaints seems to be predominant, accompanied by febrile excitement. Perhaps the bills of mortality, in the fruit season, were never more favorable, as an evidence of general public health, notwithstanding this indisposition of very young children, than at the present time.—No abatement of the fever in Charleston, S. C., seems to be manifested. It would be incorrect, we think, to give the scourge any other name than genuine yellow fellow.—On looking over the tariff of charges established by the associated physicians and surgeons of the City of New York, we notice that the fee for vaccinating stands, from $5 to $10. In this neighborhood, we have heard that the price has formerly been *ninepence !* and but few would avail themselves of the benefit of the operation even then.—Why have we not had a copy of the Art of Preserving Health ? Extracts from the new edition, with notes, &c., are noticed everywhere but in our pages. If it possesses but half the merit it is represented to have, we should be glad to see it, at least.—

An epidemic of a formidable character is said to be prevailing at Knoxville, Tenn.—Smyrna is entirely free from the plague, a circumstance of considerable interest to merchants.—A woman was poisoned in New York, last week, by taking corrosive sublimate through mistake.—Mention is made, in the exchange papers, of an alarming disease among the laborers on the Illinois canal.

☞ **List of medical graduates in Harvard College will appear in next No.**

Whole number of deaths in Boston for the week ending September 15, 34. Males, 20—females, 14.
Consumption, 2—dysentery, 6—hip complaint, 1—infantile, 3—typhous fever, 1—bowel complaint, 2—cholera infantum, 2—hooping cough, 1—fits, 1—inflammation of the bowels, 4—diarrhœa, 1—bilious fever, 1—canker, 1—dropsy on the brain, 1—scarlet fever, 1—brain fever, 1—measles, 1—quinsy, 1.

MEDICAL INSTRUCTION.

The subscribers are associated for the purpose of giving a complete course of medical instruction, and will receive pupils on the following terms :

The pupils will be admitted to the practice of the Massachusetts General Hospital, and will receive clinical lectures on the cases they witness there. Instruction, by lectures or examinations, will be given in the intervals of the public lectures, every week day.

On Midwifery, and the Diseases of Women and Children, and on Chemistry,	by	Dr. Channing.
On Physiology, Pathology, Therapeutics, and Materia Medica, - -	"	Dr. Ware.
On the Principles and Practice of Surgery, - - - - - - -	"	Dr. Otis.
On Anatomy, - - - - - - - - - - - - - -	"	Dr. Lewis.

The students are provided with a room in Dr. Lewis's house, where they have access to a large library. Lights and fuel without any charge. The opportunities for acquiring a knowledge of Anatomy are not inferior to any in the country.

The fees are $100—to be paid in advance. No credit given, except on sufficient security of some person in Boston, nor for a longer period than six months.

Applications are to be made to Dr. Walter Channing, Tremont Street, opposite the Tremont House, Boston.

WALTER CHANNING,
JOHN WARE,
GEORGE W. OTIS, JR.
WINSLOW LEWIS, JR.

Oct. 18—tf

MEDICAL INSTRUCTION.

The subscribers are associated for the purpose of giving Medical Instruction. Students will be admitted to the medical and surgical departments of the Massachusetts General Hospital, may see cases in one of the Dispensary Districts, and have abundant opportunities for observing the smallpox and varioloid diseases. They will receive clinical instruction upon the cases which they witness, and during the interval of the regular lectures at the College, they will receive instruction by lectures and recitations upon the various departments of medical science. Ample opportunities will be afforded for the cultivation of Practical Anatomy. They have access to a large library, and are provided with a study, free of expense.

Applications may be made to either of the subscribers.

M. S. PERRY, M.D.
H. I. BOWDITCH, M.D.
J. V. C. SMITH, M.D.
H. G. WILEY, M.D.

July 25—eoptN—emtJy

SCHOOL FOR MEDICAL INSTRUCTION.

The Subscribers propose establishing a private Medical School, to go into operation the first of September next. The advantages of the Massachusetts General Hospital and other public institutions will be secured to the pupils ; and every attainable facility will be afforded for anatomical pursuits.

Regular oral instructions and examinations in all the branches of the profession, will form a part of the plan intended to be pursued.

On the Practice of Medicine and Materia Medica, by - - - -	Dr. Bigelow.
On Anatomy and Surgery, by - - - - - - - - - -	Dr. Reynolds.
On Midwifery and Chemistry, by - - - - - - - - -	Dr. Storer.
On Physiology and Pathology, by - - - - - - - - - -	Dr. Holmes.

Dissections will be carried on throughout the year, and a course of Lectures on Practical Anatomy and Surgery will be given in the interval between the Medical Lectures of Harvard University.

A room will be provided in a central part of the city, with all the conveniences required by students.

JACOB BIGELOW,
EDWARD REYNOLDS,
D. HUMPHREYS STORER,
OLIVER W. HOLMES.

Boston, August 17, 1838.

Aug 22—ep3m

HARVARD UNIVERSITY—MEDICAL LECTURES.

The Lectures will begin at the College in Mason street, first Wednesday in November, at 9 o'clock, A. M., and continue three months. For a month after, additional lectures will be given. Dissections in the Medical College, and attendance at the Hospital, will also be continued.

Anatomy and Operative Surgery, by - - - - - -	Dr. J. C. Warren.
Midwifery and Medical Jurisprudence, by - - - - - -	Dr. Channing.
Materia Medica and Clinical Medicine, by - - - - - -	Dr. Bigelow.
Principles of Surgery and Clinical Surgery, by - - - - -	Dr. G. Hayward.
Chemistry, by	Dr. Webster.
Theory and Practice of Physic, by - - - - - -	Dr. Ware.

• Circulars of the Medical and Surgical Practice of the Hospital may be had of the Dean.

WALTER CHANNING,
Dean of the Faculty of Medicine.

Boston, July 23, 1838.

Aug 1—tN

BOYLSTON MEDICAL PRIZE QUESTIONS.

The Boylston Prize Committee, appointed by the President and Fellows of Harvard University, consists of the following physicians, viz. :—

John C. Warren, M.D.
Rufus Wyman, M.D.
George C. Shattuck, M.D.
Jacob Bigelow, M.D.
Walter Channing, M.D.
George Hayward, M.D.
John Randall, M.D.
Enoch Hale, M.D.
John Ware, M.D.

At the Annual Meeting of the Committee, on Wednesday, August 1, 1838, a premium of fifty dollars, or a gold medal of that value, was awarded to Edward Warren, M.D., of Boston, for a Dissertation on the question, "What are the causes, seat and proper treatment of Erysipelatous Inflammation?"

The following Prize Questions for the year 1839, are before the public, viz. :—

1st. "The pathology and treatment of rheumatism."

2d. "What is scrofula? and what is its best mode of treatment?"

Dissertations on these subjects must be transmitted, post paid, to John C. Warren, M.D., Boston, on or before the first Wednesday of April, 1839.

The following questions are now offered for the year 1840, viz.—

1st. "The pathology and treatment of typhus, and typhoid fever."

2d. "The pathology and treatment of medullary sarcoma."

Dissertations on these subjects must be transmitted, as above, on or before the first Wednesday of April, 1840.

The author of the best dissertation on either of the above subjects will be entitled to fifty dollars, or a gold medal of that value, at his option.

Each dissertation must be accompanied by a sealed packet, on which shall be written some device or sentence, and within shall be enclosed the author's name and place of residence. The same device or sentence is to be written on the dissertation to which the packet is attached.

All unsuccessful dissertations are deposited with the Secretary, from whom they may be obtained, if called for within one year after they have been received.

By an order adopted in the year 1826, the Secretary was directed to publish annually the following votes, viz.—

1st. That the Board do not consider themselves as approving the doctrines contained in any of the dissertations to which the premiums may be adjudged.

2d. That in case of the publication of a successful dissertation, the author be considered as bound to print the above vote in connection therewith. ENOCH HALE, Secretary.

Publishers of Newspapers and Medical Journals throughout the United States are respectfully requested to give the above an insertion.

Boston, August 4, 1838. Aug 8—4t

COLLEGE OF PHYSICIANS AND SURGEONS OF THE WESTERN DISTRICT, N. Y.

The annual Course of Lectures will commence on the first Tuesday of October and continue sixteen weeks.

On Midwifery, - - - - - - - -	Westel Willoughby, M.D.
On Chemistry and Pharmacy, - - - - - -	James Hadley, M.D.
On Anatomy and Physiology, - - - - - -	James McNaughton, M.D.
On Theory and Practice of Physic, - - - - -	John Delamater, M.D.
On Materia Medica and Medical Jurisprudence, - - -	T. R. Beck, M.D.
On Principles and Practice of Surgery, - - -	James McNaughton, M.D.

In consequence of the removal of Dr. Mussey to Cincinnati, the course on surgery will be delivered by Dr. McNaughton from the present session, and until the vacancy is filled by the Regents of the University.

Price of all the tickets, $56.

The College possesses a valuable medical library, an anatomical museum, and an extensive collection of minerals. A large number of students can be accommodated with rooms in the college buildings, and good private rooms are to be had in the village, at a moderate expense.

It is believed that no medical institution in the country affords greater advantages at so moderate an expense. The situation of the institution is healthy, and students are not exposed to the many allurements to idleness and dissipation which interfere with study in larger towns. The whole expense of a full course, including board, needs not exceed $100. By order,

JAMES HADLEY, Register.

N. B.—Ample opportunities for dissection are offered at a moderate cost, under the direction of the professor of anatomy. Aug. 22—ep4t

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MEDICAL INSTITUTION OF YALE COLLEGE.

The course of Medical Instruction in Yale College begins on Thursday, November 1st, 1838, and it continues seventeen weeks. The several branches are taught as follows, viz.

Theory and Practice of Medicine, by - - - -	Eli Ives, M.D.
Chemistry and Pharmacy, by - - - - -	Benjamin Silliman, M.D. and LL.D.
Materia Medica and Therapeutics, by - - -	William Tully, M.D.
Principles and Practice of Surgery, by - - -	Jonathan Knight, M.D.
Obstetrics, by - - - - - - - -	Timothy P. Beers, M.D.
Anatomy and Physiology, by - - - - - -	Charles Hooker, M.D.

The matriculation fee and contingent bill are $7,50; the fees for Chemistry, Anatomy, Surgery, Materia Medica, and Theory and Practice, are $12,50 each, and for Obstetrics $6.00—amounting to $76,00—the whole to be paid in advance. The graduation fee is $15,00.

Yale College, Aug. 16, 1838. A29—6w CHAS. HOOKER, *Secretary.*

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